

FIG. 1

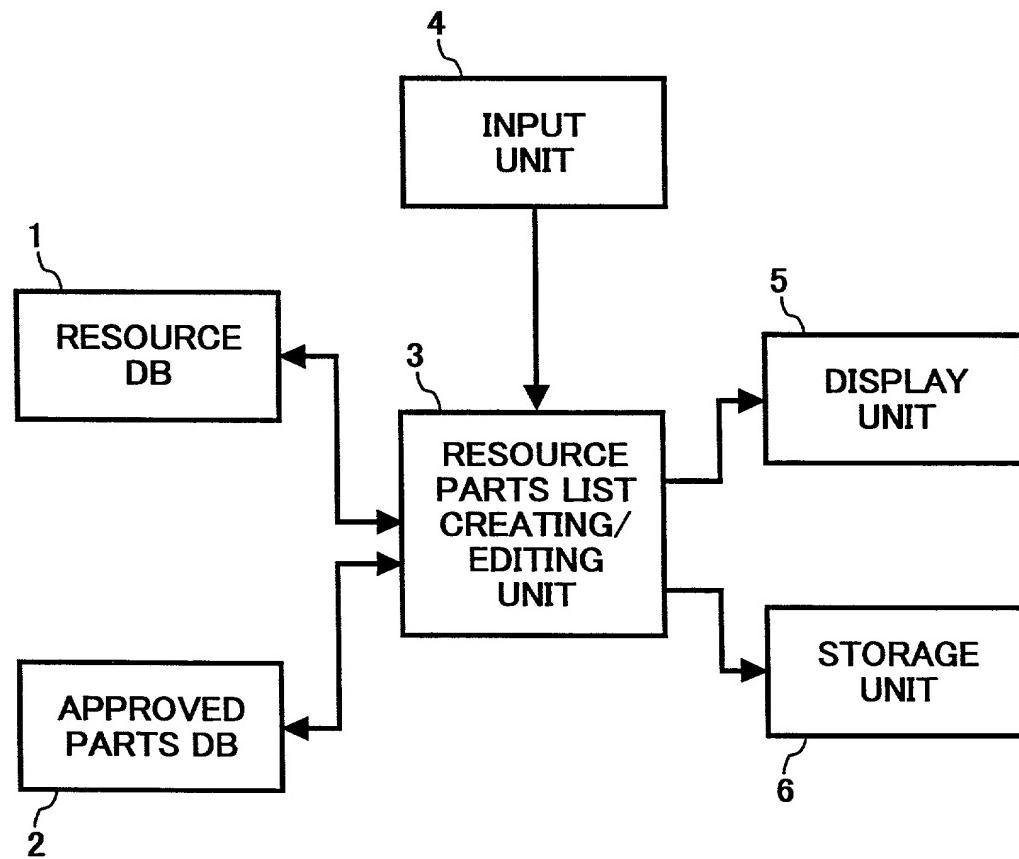


FIG. 2

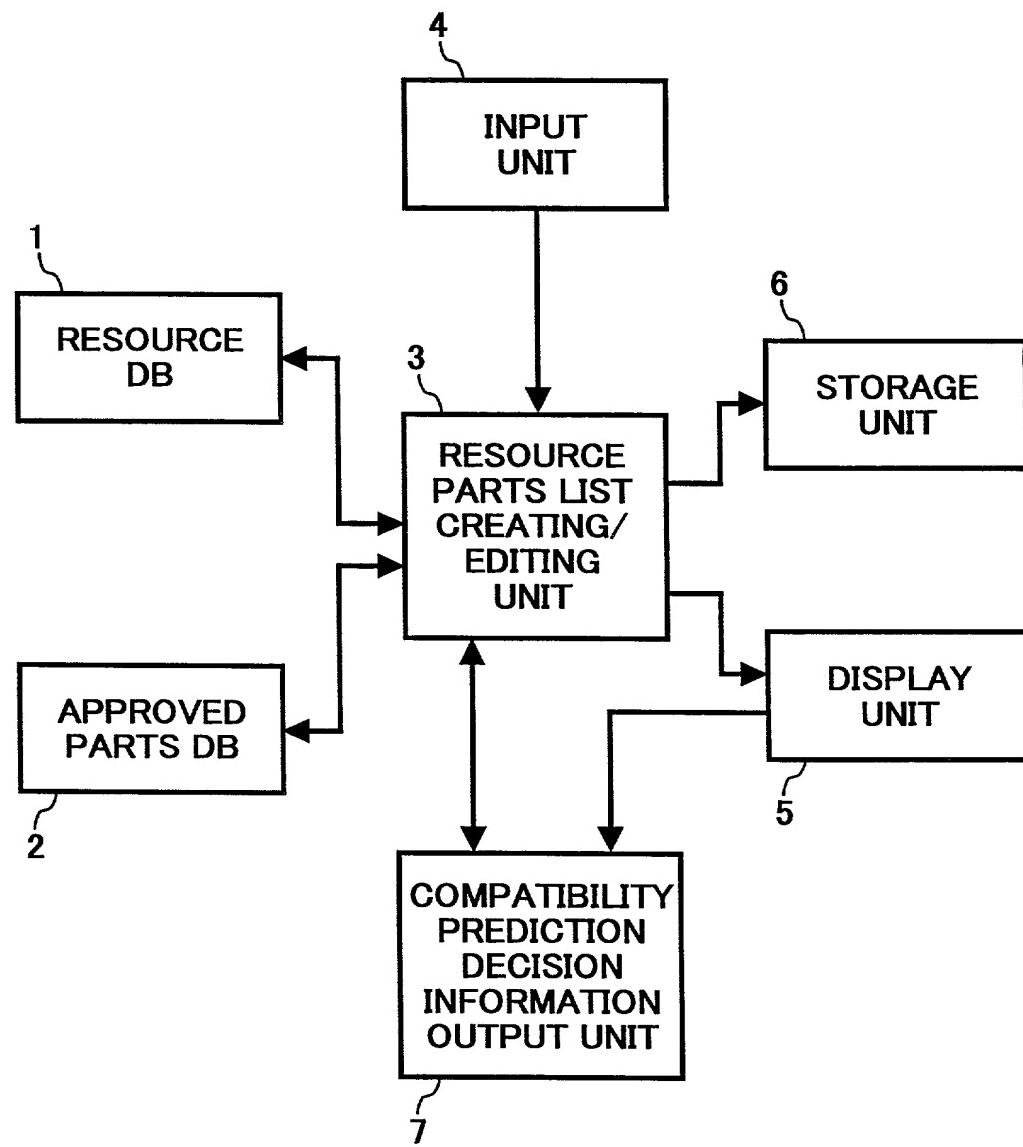


FIG. 3A

	FUNCTION LEVEL 1	FUNCTION LEVEL 2	FUNCTION LEVEL 3	
1	READ	IMAGE SENSOR		SENSING
2	READ	ANALOGUE SIGNAL PROCESSING	DIRTY BACKGROUND REMOVAL	ELECTRICAL

FIG. 3B

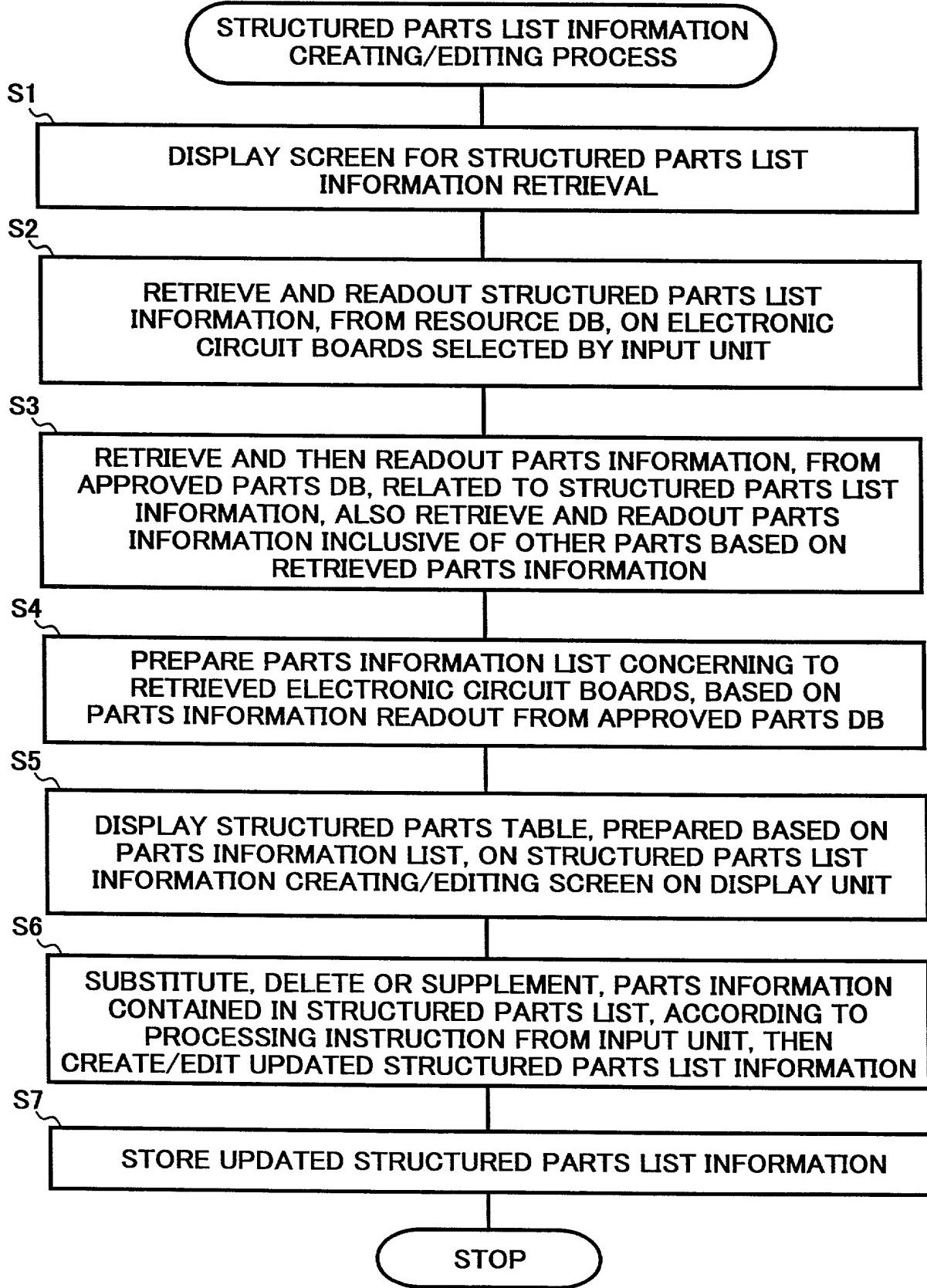
QUANTITY

	FUNCTIONAL DEVICE	MAKER	MAKER'S MODEL NUMBER	MAKER'S PART NUMBER	UNIT PRICE	
1	CCD LINEAR IMAGE SENSOR	A CO.	XXXXXX	XXXXXX	XXXX	1
2	CUSTOM IC	B CO.	XXXXXX	XXXXXX	XXXX	1

FIG. 3C

	PCB	USER'S PART NUMBER	UNIT
1	PRINTED BOARD: XX TYPE	XXXXXX	SCANNER
2	PRINTED BOARD: XX TYPE	XXXXXX	SCANNER

## FIG. 4



**FIG. 5**

RETRIEVE	ITEM CLEAR	END	PRINT	SPEC	APPEARANCE	CLASS DATA	SAME CHARACTERISTICS
<b>RETRIEVAL KEY</b>							
PART CLASS	PCB	...		PART CLASS	PCB	...	...
PCB NAME	AA-BB	...		PCB NAME	AA-BB	...	...
PROD LOCATION	...	...		PROD LOCATION	...	...	...
PCB PART NUMBER	A123	SHAPE		PCB PART NUMBER	A123	SHAPE	...
PART NAME	PCB: LL	OUNT METHOD		PART NAME	PCB: LL	OUNT METHOD	...
MODEL STATUS	GENERAL	EXTERNAL VIEW		MODEL STATUS	GENERAL	EXTERNAL VIEW	...
DATA RETRIEVED: 1	...	DELIVERY SPEC		DATA RETRIEVED: 1	...	DELIVERY SPEC	...
DATA RETRIEVED: 11	...	BRIEF FOOTPRINT		DATA RETRIEVED: 1	...	BRIEF FOOTPRINT	...
10	STATUS	PCB NAME	PROD LOCATION	PART NAME	...	...	...
1	GENERAL	AA-BB	...		...	...	...
2	GENERAL	AA-CC	...		...	...	...
3	GENERAL	L-1A2	...		...	...	...
4	GENERAL	L-1B2	...		...	...	...
5	GENERAL	DEF-1	...		...	...	...
...	...	...	...		...	...	...

**FIG. 6**

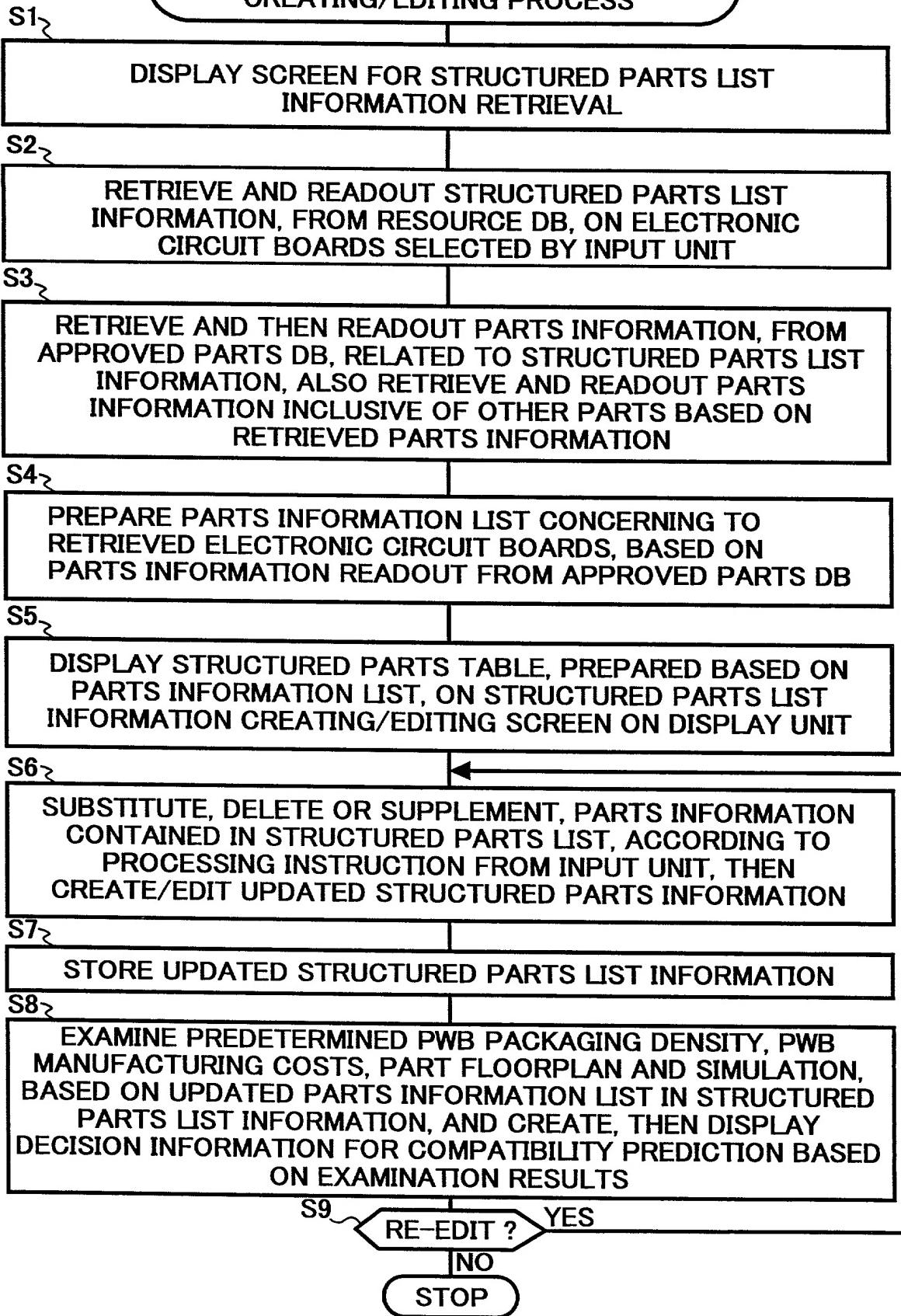
PART CLASS	CHARACTERISTICS		
PCB NAME	NAME	VALUE	UNIT
PROD LOCATION	...	...	...
PCB PART NUMBER	...	...	...
PART NAME	...	...	...
MODEL STATUS	...	...	...
TARGET PRICE (DESIRED)	CURRENT PRICE		
TARGET PRICE (MANDATORY)	NET PRICE	... CURRENT PRICE	PRICE WHEN MASS-PRODUCED
	... ... ... ... ...	... ... ... ... ...	... ... ... ... ...
RECOMMENDED	PART NUMBER	PART CLASS	MAKER'S MODEL NO.
APPROVED	50011	CONNECTOR TO/FROM BOARD	151525-3 A ELECTRONICS
APPROVED	51907	SIGNAL SYSTEM	153123-7 A ELECTRONICS
APPROVED	08812	CONNECTOR SIGNAL SYSTEM	153123-8 A ELECTRONICS
APPROVED	08643	TRANSISTOR	AB114 B ELECTRIC
APPROVED	04438	TRANSISTOR	AB333 B ELECTRIC
...	...	RESISTOR ARRAY	3-GEG-1 C INDUSTRY
	...	...	...

FIG. 7

PART CLASS		CHARACTERISTICS			PRICE WHEN MASS-PRODUCED	
PCB NAME	PCB LOCATION	NAME	VALUE	UNIT	NET COST	ESTIMATED PRICE WHEN MASS-PRODUCED
PCB PART NUMBER	...	...	...	...	...	...
PART NAME	...	...	...	...	...	...
MODEL STATUS	...	...	...	...	...	...
TARGET PRICE (DESIRED)		CURRENT PRICE	NET PRICE	...	...	...
TARGET PRICE (MANDATORY)		CURRENT PRICE	...	...	...	...
STATUS	PART NUMBER	PART CLASS	MAKER'S MODEL NO.	MAKER	ALTERATION	QUANTITY
RECOMMENDED	01234	CONNECTOR TO/FROM BOARD	151525-3	A ELECTRONICS	...	...
APPROVED	50011	SIGNAL SYSTEM	153123-7	A ELECTRONICS	...	...
APPROVED	51907	CONNECTOR SIGNAL SYSTEM	153123-8	A ELECTRONICS	...	...
RECOMMENDED	70458	TRANSISTOR	M11LL33	M FACTORY	...	...
APPROVED	08643	TRANSISTOR	AB333	B ELECTRIC	...	...
APPROVED	04438	RESISTOR ARRAY	3-GEG-1	C INDUSTRY	...	...
RECOMMENDED	202201	MEMORY DRAM	M72-125	N PART INDUSTRY	...	...
...	...	...	...	...	...	...

## FIG. 8

### STRUCTURED PARTS LOST INFORMATION CREATING/EDITING PROCESS



## FIG. 9A

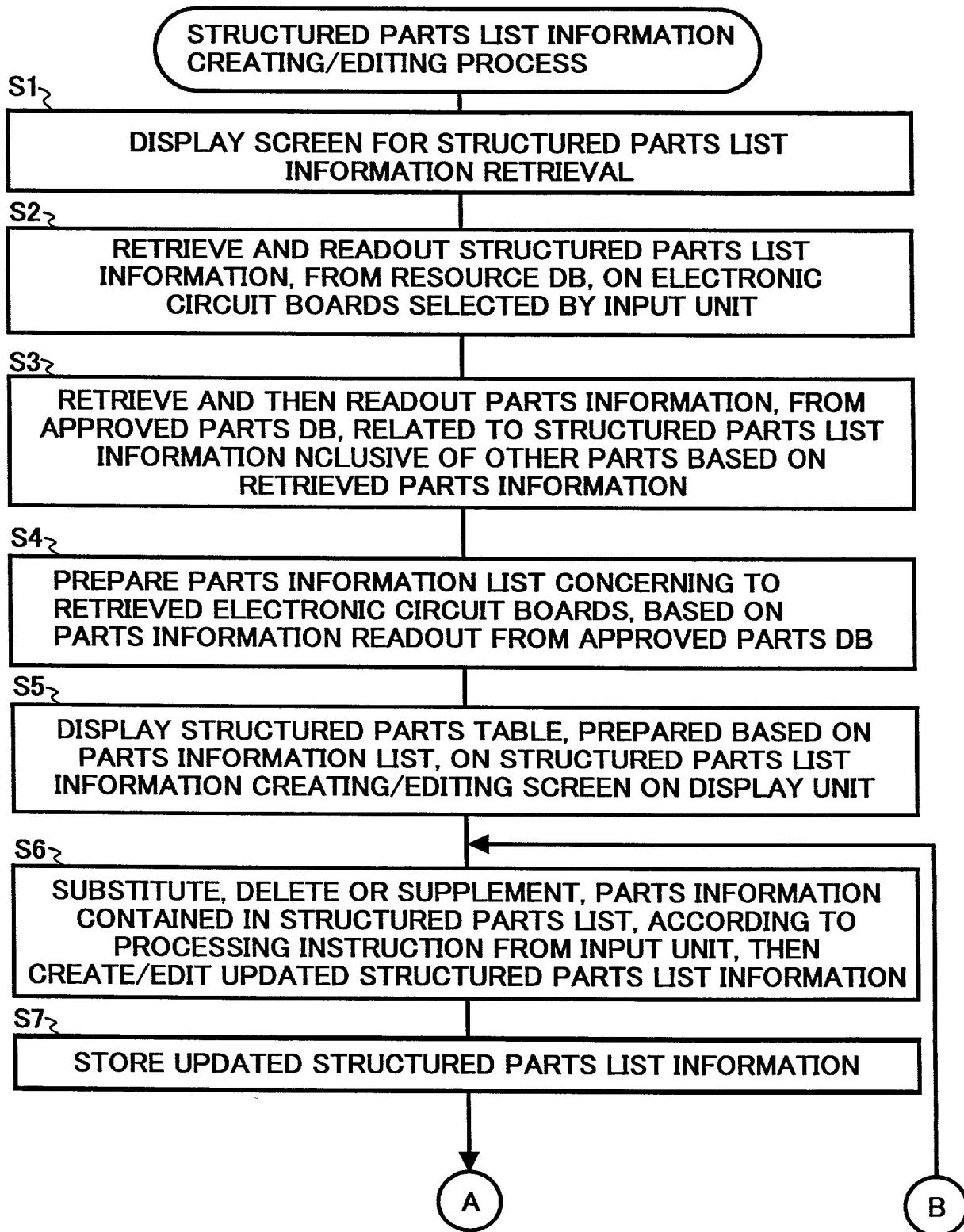


FIG. 9B

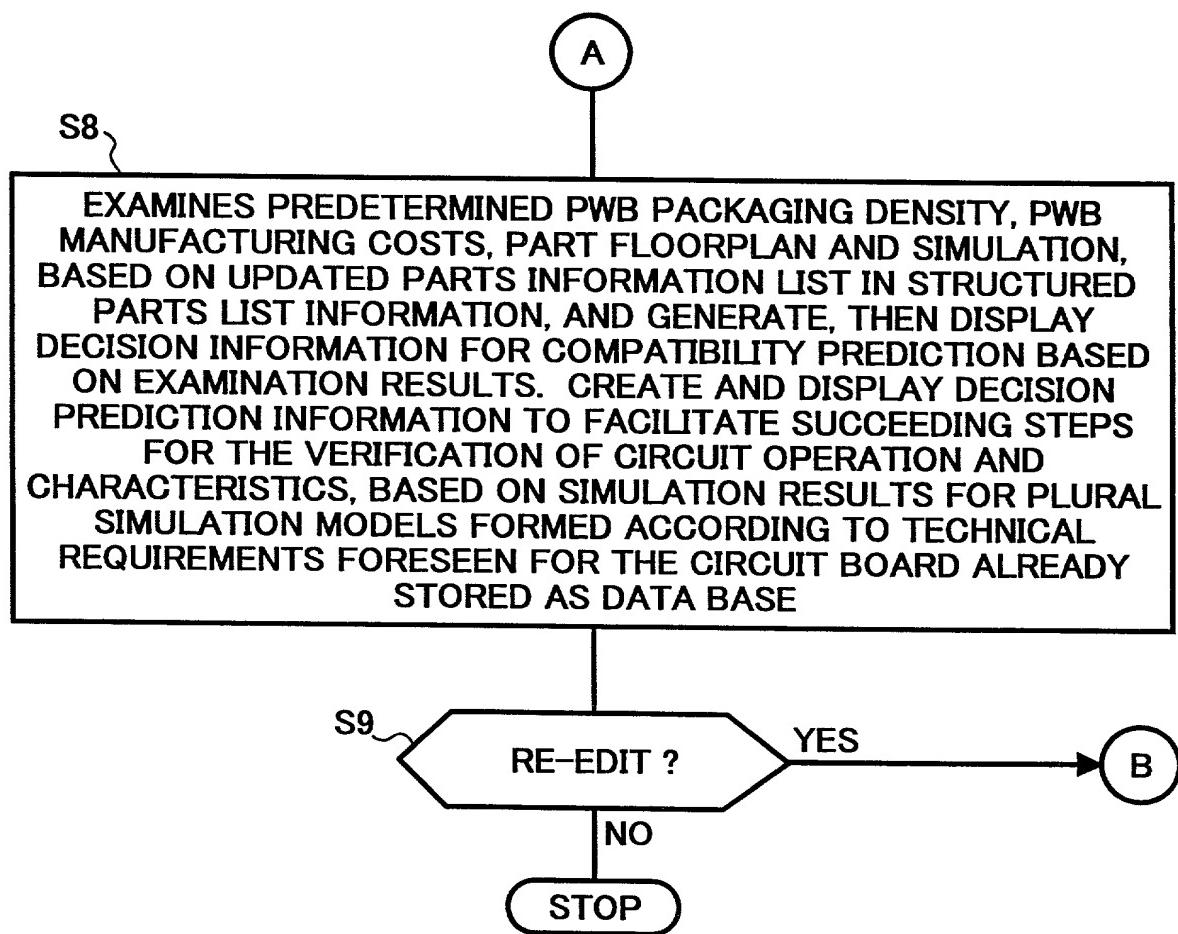


FIG. 10

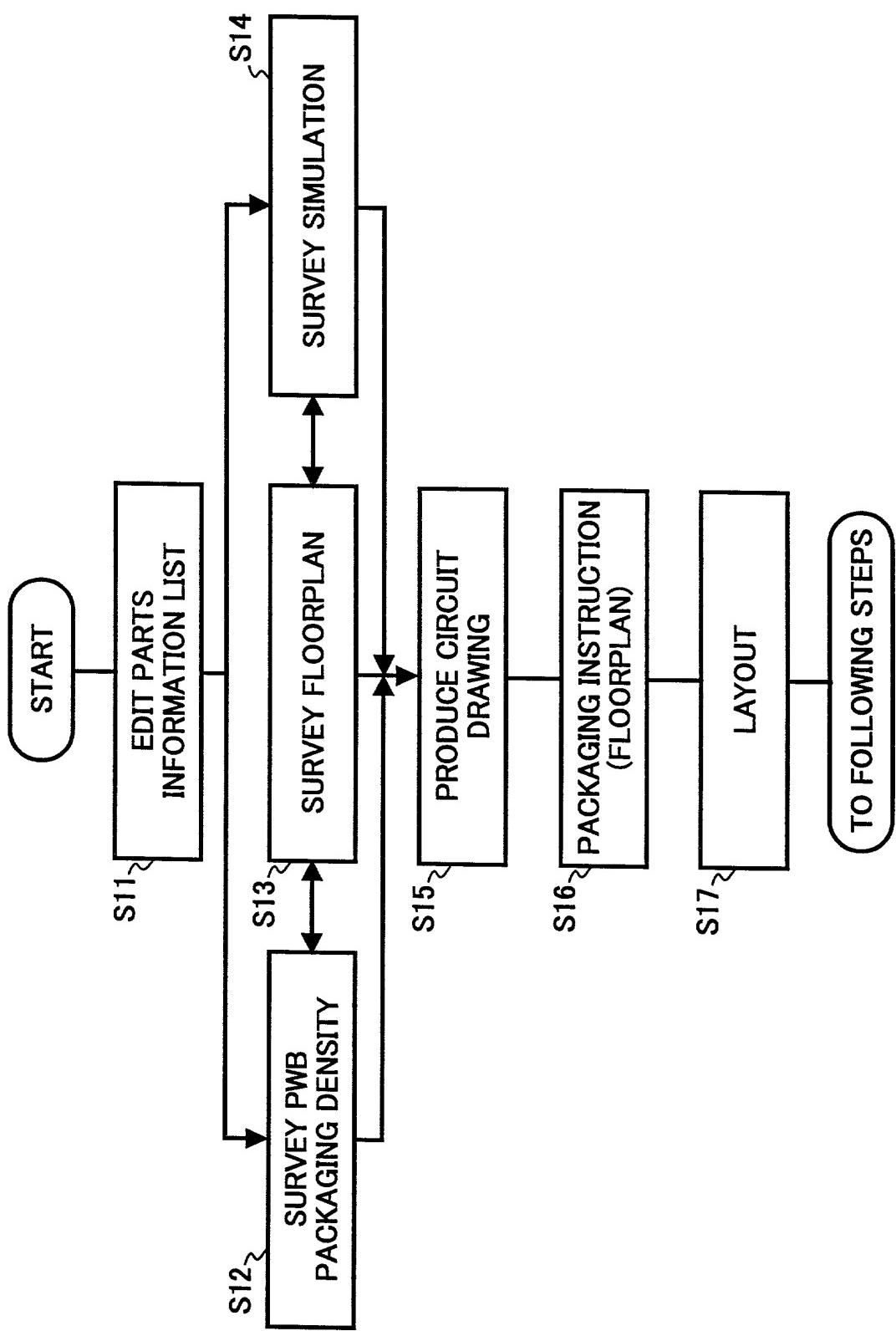


FIG. 11

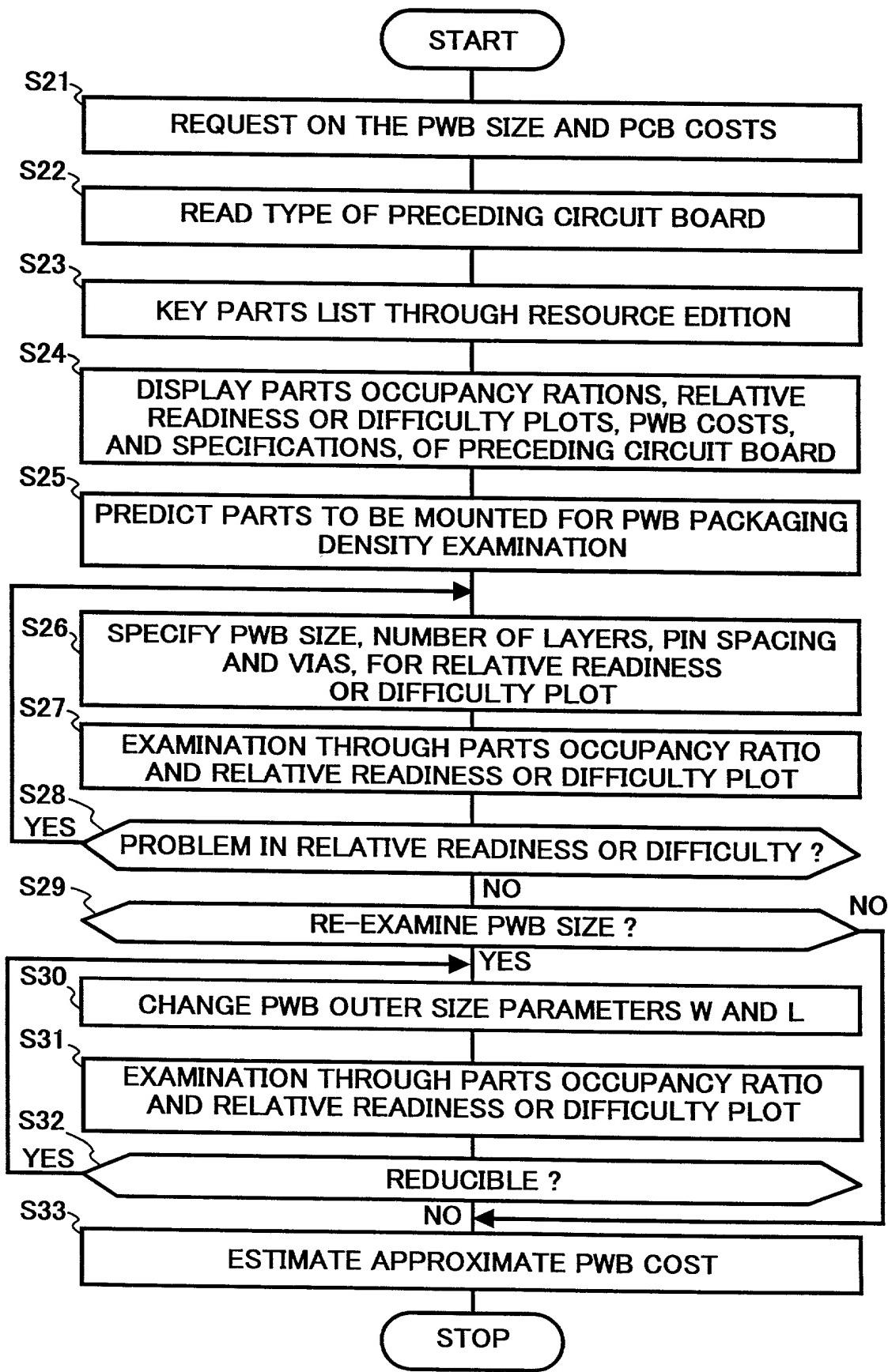


FIG. 12

PACKAGING DENSITY EXAMINATION X

PWB SIZE

21

SWITCH PARTS OCCUPANCY RATIO

SINGLE-SIDED  DOUBLE-SIDED MOUNTING

22

PWB PARAMETOR

W 121 mm  
L 90 mm

23 26

PWB AREA 108.9 cm<sup>2</sup>  
PIN SPACING 3 ▼

27

PREDICTION

OBTAINED FROM KEY PARTS  
PIN NUMBER MULTIPLIED  
BY COEFFICIENTS

24

NUMBER OF PINS 1981  
PARTS OCCUPANCY AREA 77.03 cm<sup>2</sup>  
PIN DENSITY 18.19 PIN/cm<sup>2</sup>

KEY PARTS

25

NUMBER OF PARTS 49  
NUMBER OF PINS 1087  
PARTS OCCUPANCY AREA 60.65 cm<sup>2</sup>

APPROXIMATE PWB COSTS

28

COMMENTS ON PREDICTION COEFFICIENTS

29

RESOURCE DISPLAY

30

FIG.13A

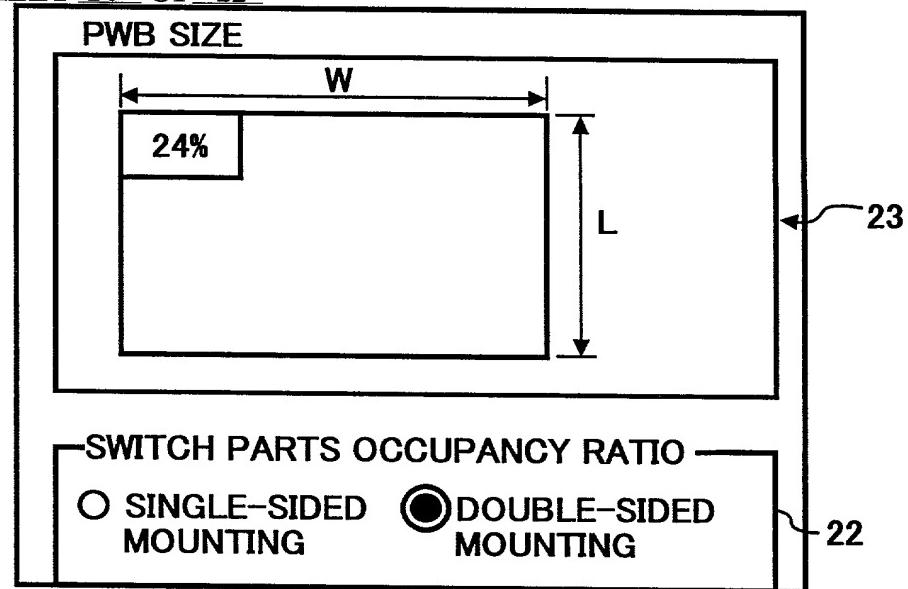


FIG.13B

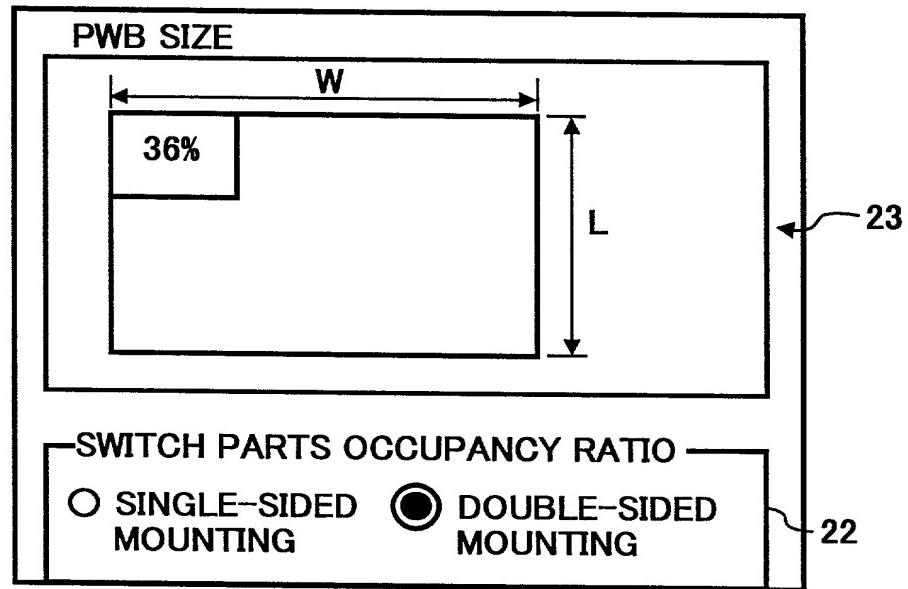


FIG.13C

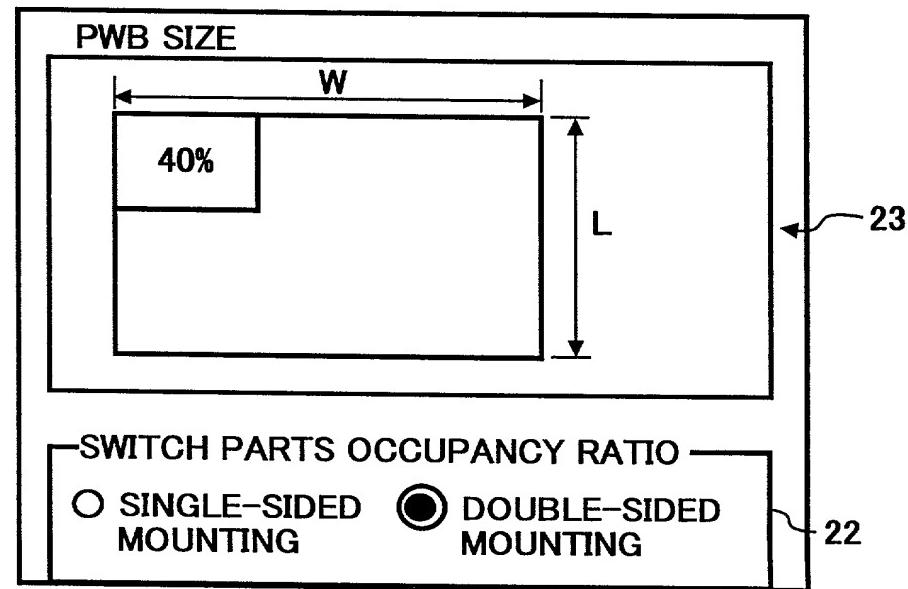


FIG. 14

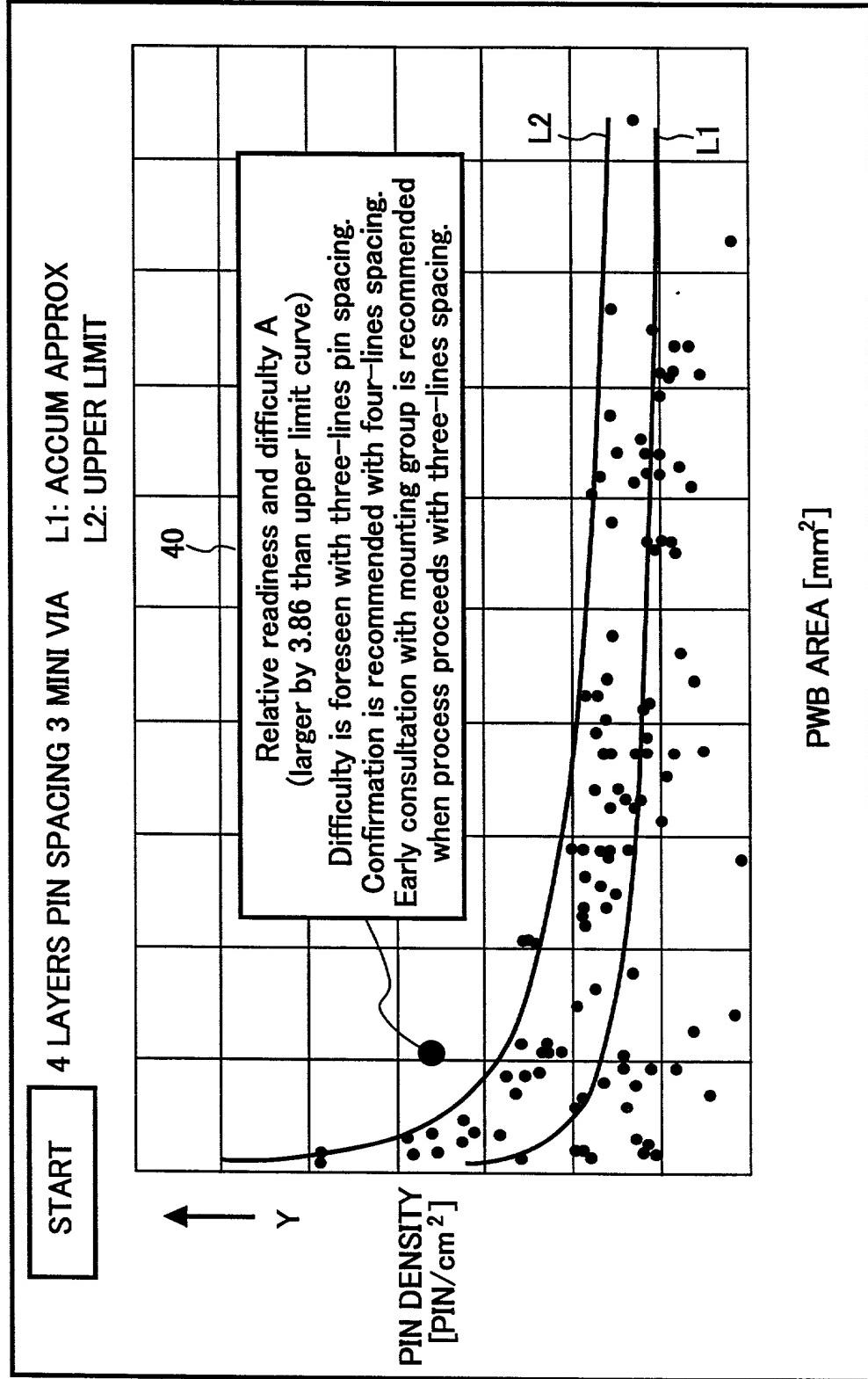


FIG. 15

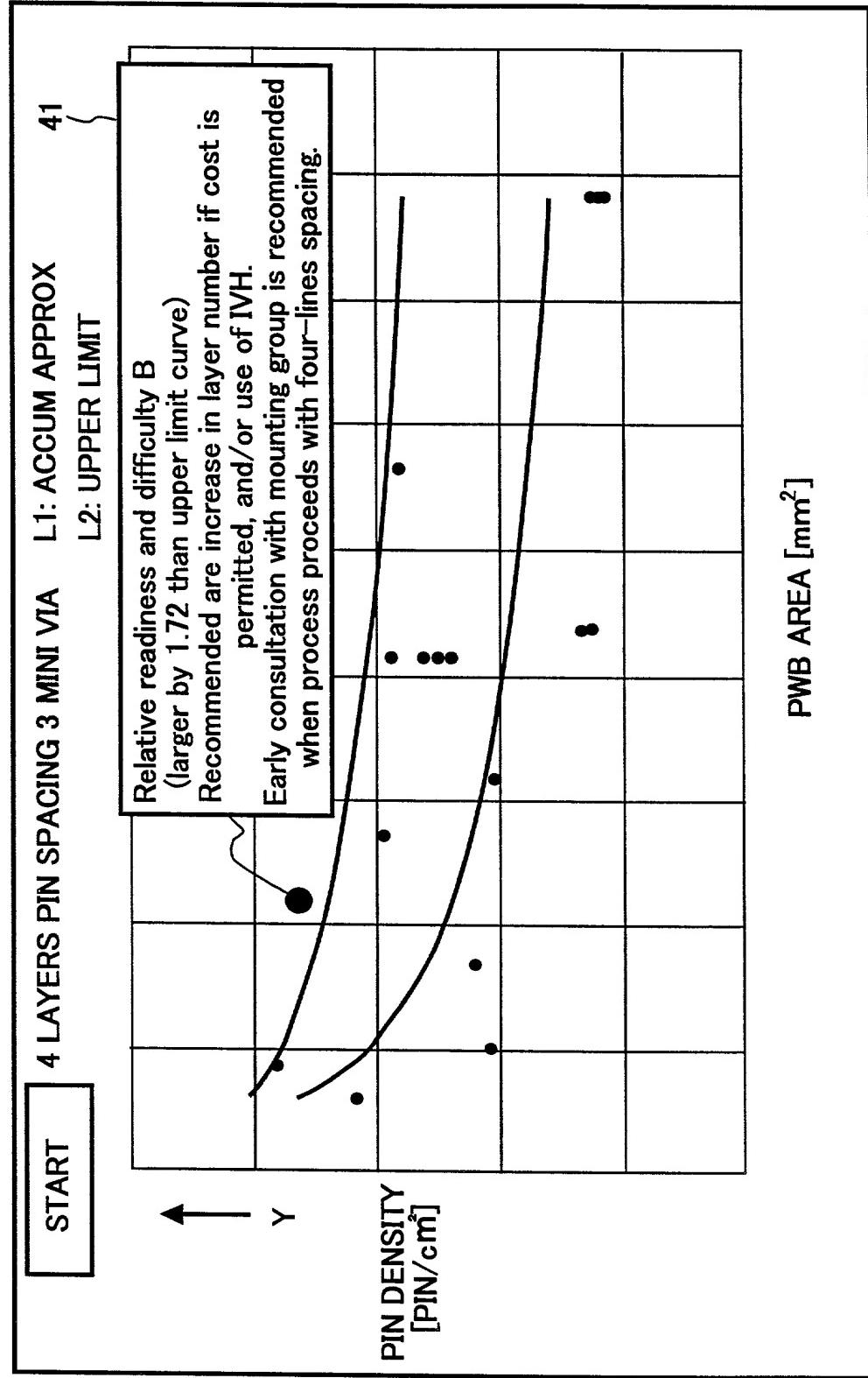


FIG. 16

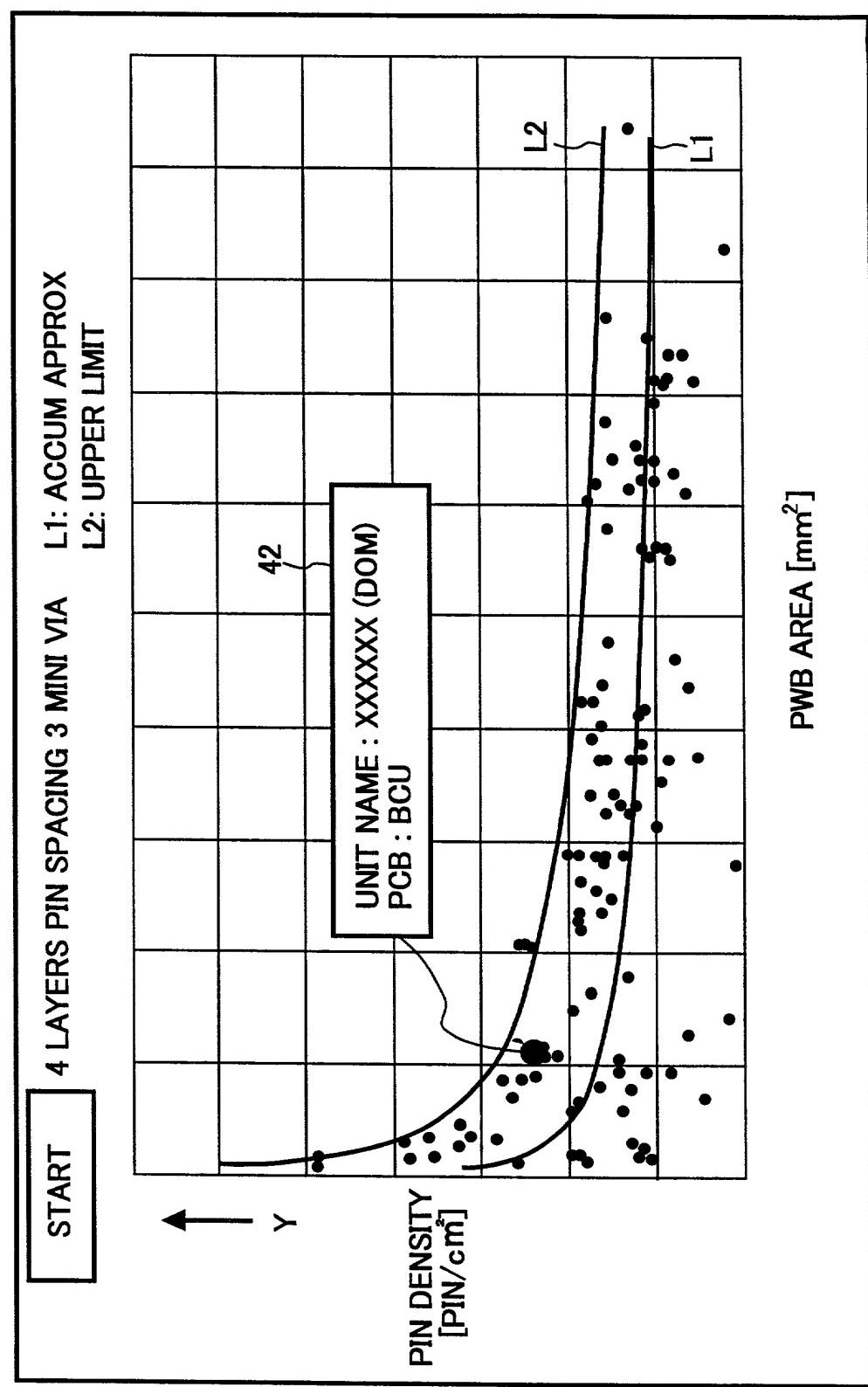


FIG. 17

889

APPROXIMATE COSTS		<input checked="" type="checkbox"/>
PWB SIZE	121 × 90	
PIN SPACING	3 LINES	
SHEET THICKNESS		
<input type="radio"/> 0.8	<input type="radio"/> 1.0	<input type="radio"/> 1.2
<input checked="" type="radio"/> 1.6		
MATERIALS		
<input checked="" type="radio"/> FR-4	<input type="radio"/> CFM-3	
VIA		
<input type="radio"/> Middle	<input checked="" type="radio"/> Mini	<input type="radio"/> BVH
NUMBER OF LAYERS		
<input type="radio"/> 2	<input checked="" type="radio"/> 4	<input type="radio"/> 6
CUT-OUT SHEET NUMBER = 36		
APPROXIMATE COSTS = 889 YEN		

## FIG. 18

### PARTS PREDICTION COEFFICIENTS

X

Number of pins and parts occupancy area are estimated based on key parts arrangement. Accordingly, further calculations based on these values may yield results different from those obtained experimental data.

In the present calculation, therefore, prediction coefficients are used as shown below in the table, which are provided to estimate these values more precisely to realize actual mounting on the PWB by taking into account of predicted number of the parts expected to be mounted.

	RATIO OF PIN NUMBER TO TOTAL KEY PARTS	AREA PER PIN	PREDICTED PIN NUMBER	PREDICTED AREA (cm <sup>2</sup> )
RESISTOR	1.7	0.8	639	5.11
CAPACITOR	5.2	3.7	209	7.73
OTHER	23.6	7.7	46	3.54

PUSH TO ALTER

.....  
ALTER  
.....

END

FIG. 19A

INPUT RESOURCE PART NO.		
PWB PART NUMBER      E0005678		
43 ~	OK	CANCEL

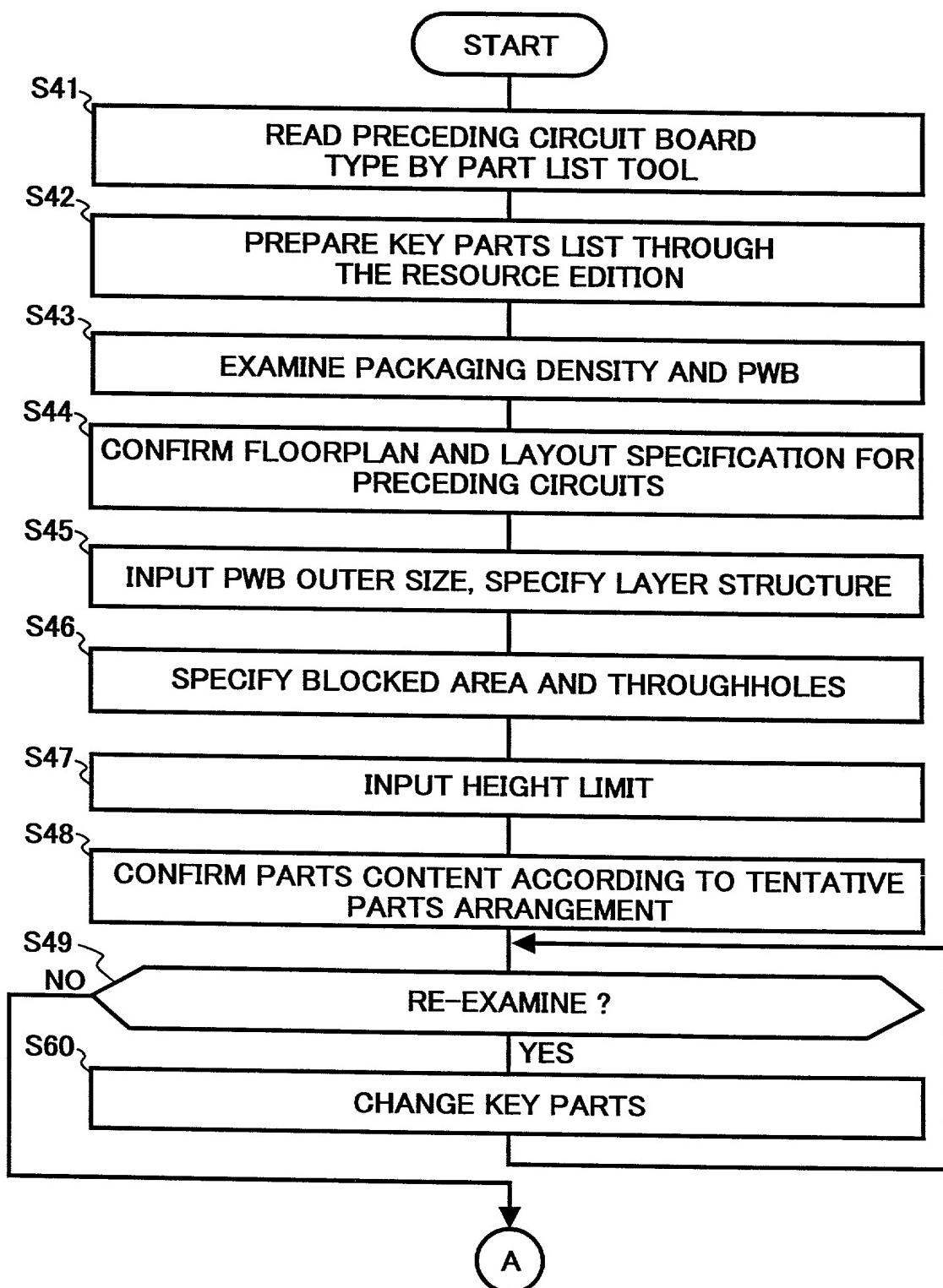
FIG. 19B

APPROXIMATE PWB COSTS
COMMENTS ON PREDICTION COEFFICIENTS
30 ~      RESOURCE DISPLAY

FIG. 19C

APPROXIMATE PWB COSTS
COMMENTS ON PREDICTION COEFFICIENTS
44 ~      RETURN

FIG. 20



# FIG. 21

